

memorandum

DATE: January 8, 1997

REPLY TO

ATTN OF: Office of Environmental Policy and Assistance(EH-413):Bascietto:6-7919

SUBJECT: ENVIRONMENTAL PROTECTION AGENCY (EPA) SOIL SCREENING GUIDANCE

TO: Distribution

PURPOSE OF THIS MEMO To inform Departmental elements of the availability of EPA's guidance for developing and applying *soil screening levels*, and to explain their intended utility in expediting the evaluation of contaminated soils at DOE CERCLA sites.

SOIL SCREENING GUIDANCE On May 31, 1996, the EPA announced the availability of its Soil Screening Guidance (see 61 *FR* 27349). The guidance is intended to provide a simple approach to standardize and expedite the evaluation of contaminated soils at CERCLA sites. It supports the identification of those portions of a site containing soils that are contaminated at levels that warrant a full evaluation of potential risk to support selection of a remedial option, as well as those portions containing soils that do not present risks warranting further analysis (i.e., those that can be "screened out"). That identification is made by developing for each exposure pathway human health-based, chemical-specific soil screening levels (SSLs) for contaminants in soil. These chemical-specific SSLs are then compared against the baseline concentrations of each contaminant of concern in site soils. Discrete areas of soils with contaminants at concentrations that fall below their respective SSL value generally can be eliminated from further investigation at the site. Although those site areas with any contaminants exceeding their SSL do not necessarily require remediation, they do require further evaluation to determine if removal or remedial action is necessary. Thus, SSLs are not cleanup standards (*see box*).

The SSLs are risk-based soil contaminant concentrations (presented in units of mg of contaminant per kg of soil) that are derived based on future residential land use assumptions and associated exposure scenarios.

What they are: Soil Screening Levels provide a simplified means of evaluating contaminated soil areas of a site (1) to identify those areas of potential concern that require further assessment to evaluate risks, and (2) to eliminate (*screen out*) other specific soil areas that do not require further investigation.

What they are not: Soil Screening Levels do not necessarily represent cleanup levels for a site. EPA's Soil Screening Guidance is not a Rule, and its use is not legally binding on EPA or others. Also, EPA notes that the Soil Screening Guidance should *not* be applied to areas with radioactive contaminants.

Cautions regarding their application: Soil Screening Levels should only be applied in evaluating soils at sites that are consistent with the assumptions upon which the guidance was based (e.g., residential land use, no ecological concerns). As noted at 61 *FR* 27351, "EPA does not expect this tool to be useful at all *[emphasis added]* NPL sites." It is possible, however, that Soil Screening Levels specific to other land use scenarios may be developed in the future.

The residential exposure pathways addressed in the EPA guidance are:

- Direct ingestion;
- Inhalation of volatiles and fugitive dust;
- Ingestion of contaminated groundwater;
- Dermal absorption;
- Ingestion of contaminated homegrown produce; and
- Migration of volatiles into basements.

If pathways in addition to those listed above are present at a given site, the SSLs may still be applicable, although the additional pathways will need to be evaluated in the Remedial Investigation/Feasibility Study to ascertain if the SSLs will be adequately protective for all pathways involved. Furthermore, if ecological risk associated with soil contaminants is a concern, SSLs would *not* be sufficient to rule out further investigation.

EPA's Soil Screening Guidance is presented in three documents (*see box*): A User's Guide; a Technical Background Document; and a Quick Reference Fact Sheet. It provides both generic soil screening levels for selected soil contaminants, as well as an approach for developing site-specific SSLs. Furthermore, for development of site-specific SSLs, both a simplified methodology as well as more detailed modeling approaches (that address site conditions that are more complex than those foreseen in the simplified methodology) are provided.

EPA's Soil Screening Guidance and supporting documentation has been issued in the following three volumes:

- *Soil Screening Guidance Quick Reference Fact Sheet* (9355.4-14FSA; B-96-963501; EPA/540/F-95/041): Provides an overview of the development and application of soil screening levels.
- *Technical Background Document for Soil Screening Guidance* (9355.4-17A; PB-96-963502; EPA/540/R-95/128): Describes the technical basis for the soil screening level methodology, and provides generic soil screening level values.
- *Soil Screening Guidance: User's Guide* (9355.4-23; PB-96-963505; EPA/540/F-96/018): Addresses in detail the methodology for development of soil screening levels for site-specific applications.

In addition, *Soil Screening Guidance: Response to Comments* (9355.4-22; PB-96-963506; EPA/540/R-96/019), which provides discussion of the evolution of the final soil screening guidance, also is available.

**SITE
SPECIFIC
SSL VALUES**

Site specific soil screening is conducted via the following seven steps:

- Develop a conceptual site model (CSM) - a three-dimensional description of current site conditions, including contaminant sources and release mechanisms, exposure pathways and migration routes, and potentially exposed receptors;
- Compare the CSM with the SSL scenario - to determine if the exposure conditions and expected land use at the site are consistent with the assumptions underlying the SSL guidance (i.e., if the SSL Guidance is appropriate for application to the site);
- Define data collection needs - detailed in a sampling and analysis plan (SAP) for surface and subsurface soils, as well as for groundwater;
- Sample and analyze site soils - in compliance with the SAP, determine existing medium-specific concentrations of contaminants for which SSLs will be developed;

- Calculate site-specific SSLs - using equations provided by the Soil Screening Guidance and that are consistent with the estimation of Reasonable Maximum Exposure to human receptors;
 - Compare calculated SSLs with site soil contaminant concentration data - to identify those areas where medium-specific contaminant concentrations are below the calculated SSLs; and
 - Identify site areas requiring further study - those areas where medium-specific contaminant concentrations exceed the calculated SSLs are targeted for further evaluation in the RI/FS.
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**GENERIC
SSL VALUES** In the Technical Background Document EPA provides generic SSLs for 110 contaminants commonly found at CERCLA sites. These values are provided for ingestion, inhalation of volatiles, and migration of groundwater exposure pathways. Along with the SSL values are provided the assumptions underlying each generic pathway, as well as discussions of the effects of contaminant source size and mass on the generic SSLs and a sensitivity analysis for each pathway. This ancillary information is provided specifically to enhance the user's understanding of the both the applicability and limitations of the generic values, and thereby to avoid their misuse.

**DOE
CERCLA
SITES** EPA's Soil Screening Guidance provides DOE remedial site managers with an easy-to-use tool that can accelerate the completion of soil investigations at DOE CERCLA sites while simultaneously reducing their cost. In addition, its use should promote consistency in soil cleanup actions among DOE sites. The ability to rapidly identify contaminated soils of potential concern and to screen out other, less contaminated soils from further evaluation will promote efficiency as well as substantial cost savings in DOE's CERCLA response program.

**GUIDANCE
ACCESS** EPA's Soil Screening Guidance documents can be obtained from the National Technical Information Center (NTIS) in Springfield Virginia, (703) 487-4650, or through the "Products" selection on the EPA Superfund World Wide Web site, Internet address: www.epa.gov/superfund/index.html.

CONTACT Questions concerning the information contained herein may be directed to John Bascietto of my staff by:

- Calling (202) 586-7917,
- Faxing messages to (202) 586-3915, or
- Communicating electronically, via Internet, to "john.bascietto@eh.doe.gov".

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